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KCC-15,814

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Jeffrey David SHELLEY Kurtis L. BROWN	Group No. 1771
Serial No.:	10/010,620	Examiner: E. Cole
Filing Date:	06 December 2001	
Title:	MULTI-LAYER APPROACH TO PRODUCING HOMOFILAMENT CRIMP SPUNBOND	

APPEAL BRIEF UNDER 37 C.F.R. 1.192

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Applicants herewith submit in triplicate their Appeal Brief in the above-identified case, pursuant to their Notice of Appeal filed 15 January 2004.

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450 on

15 March 2004.

15 Mar 04 — Roland W Norris

Date — Signature

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1. REAL PARTY IN INTEREST

The real party in interest is Kimberly-Clark Worldwide, Inc., the assignee of the present application (as recorded at reel 012736, frame 0139).

2. RELATED APPEALS AND INTERFERENCES

Applicant is not aware of related appeals or interferences with regard to the present application.

3. STATUS OF CLAIMS

The application was originally filed with Claims 1-38. Claims 7-11, 13, 15-25, 27, and 29-38 are pending. Claims 1-6, 12, 14, 26 and 28 are cancelled. The claims under consideration are 7-11, 13, 15-25, 27, and 29-38. The rejection of all claims under consideration is appealed.

4. STATUS OF AMENDMENTS

Two amendments to the claims were filed subsequent to final rejection on 15 October 2003. The proposed amendment of 15 December 2003 was not entered by the Advisory Action of 15 January 2004. The amendment of 15 January 2004 was entered by the Advisory Action of 10 February 2004.

5. SUMMARY OF INVENTION

The invention as claimed in independent Claim 7 is a method of making a lofty nonwoven fabric laminate in the order stated by its five limitation clauses.

Thus, according to the original Claim 7:

7. A method of making a lofty nonwoven fabric laminate in a single, in-line process, comprising steps in the order of:

a) depositing a first layer of filaments onto a wire; [see element 70 of Fig. 1]

b) bonding the first layer to an integrity sufficient to withstand high speed web transfer; [see element 84 of Fig. 1]

c) depositing a second layer of crimped homofilament fibers connected to the first layer while the first layer remains on the wire; [see elements 72 or 74 of Fig. 1]

d) traversing the second layer of crimped homofilament fibers through a flow of heated air at a temperature, flow rate, and traversal rate sufficient to set the crimps of the fibers without substantial melt bonding or relaxation of the fibers; [see elements 88/89 of Fig. 1]and

e) bonding the heat set second layer and the first nonwoven layer in a manner having sufficient integrity to withstand high speed web transfer. [see element 90 of Fig. 1]

A counterpart article claim is presented in independent Claim 21, with reference to Fig. 3, to wit:

21. (Currently Amended) A lofty nonwoven fabric laminate, comprising:

a first nonwoven layer having sufficient integrity to withstand high speed web transfer [ref. nos. 96 or 98];

a lofty, second nonwoven layer having stable, uncompacted crimped homofilament fibers substantially free of melt bonding and having sufficient integrity to withstand high speed web transfer; [ref. no. 94] and

the second nonwoven layer and the first nonwoven layer bonded with

sufficient integrity to withstand high speed web transfer.

"In general, the method comprises in-line production of a mechanical strength layer such as a heat treated spunbond web layer or film layer, and the application of the crimped filament web over the top of, or connected to, the mechanical strength layer. The crimped layer retains its loft because the fibers are not crushed or subject to excessive heat during processing of the laminate." (DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS at page 13, line 18.)

The method and article of the invention are summarized in an exemplary embodiment in the SUMMARY OF THE INVENTION at page 11, line 13 as:

"A web of homofilament crimped fibers is subjected to a diffused hot air knife (HAK) processing which provides heat for setting the crimps in the filaments without excessive interfiber bonding or relaxing of the crimp. The set-crimp web is attached or laminated to a more rugged material layer for providing the web integrity necessary for high speed web transfer technology. The laminate is desirably produced and treated in an in-line process which enables economies of manufacture."

Thus, per the ABSTRACT OF THE DISCLOSURE at page 30:

"A multilayer laminate is produced with in-line fabric deposition. One layer of the multilayer laminate has stable, heat-set, helically crimped fibers which are uncompacted and therefore retain their loft."

Independent Claims 7 and 21 further clarify that the second web of heat set crimped filaments have sufficient integrity to withstand high speed web transfer such as taught at page 20, line 9:

"Because homofilament helical crimped fibers tend to relax if heated vigorously, and because of the crimped fiber web's lack of structural integrity, the crimped fibers 94 are heat set by the diffuse air knife 88 at a temperature, air flow rate, and traversal rate sufficient to heat set the crimped structure without substantial melt bonding or relaxation of the crimps."

Thus, per the SUMMARY OF THE INVENTION at page 12 line 18, the present invention provides utility such as:

"The crimped fiber laminate material made according to the present invention can be useful for high loft and high bulk applications such as the loop portions of hook and loop fasteners when designed for engageability with the hook portions, or if a natural fabric cloth-like feel is desired, the fibers may be designed to produce fabric of good softness and drape while keeping sufficient bulk and loft to aid in the cloth like feel. The crimped fiber laminate material of the present invention may further be useful for making fabrics which are extensible largely in the cross direction of the resultant nonwoven web."

6. ISSUES

The issue presented for review is as follows:

1) Is the Examiner correct in rejecting all Claims under consideration as obvious over Arnold et al. (U.S. 5,707,468; hereinafter "Arnold") in view of Kane et al. (U.S. 4,359,445; hereinafter "Kane")?

7. GROUPING OF CLAIMS

The Claims are grouped as follows:

Group 1. Claims 7-11, 13, and 15-20 dealing with a method of making a lofty nonwoven laminate in a particular order of steps.

Group 2. Claims 21- 25, 27, and 29-38 dealing with a lofty nonwoven laminate with a layer of stable uncompacted crimped homofilament fibers.

8. ARGUMENT

1) Is the Examiner correct in rejecting all Claims under consideration as obvious over Arnold et al. (U.S. 5,707,468; hereinafter "Arnold") in view of Kane et al. (U.S. 4,359,445; hereinafter "Kane")?

It is contended by the final Office Action of 15 October 2003 that a person

having ordinary skill in the art would "form the fabric of Arnold so that it comprised layers that comprised the crimped homopolymeric fibers of Kane et al." (page 2, para. 2, 5th line from bottom). Applicants have traversed the basis of this rejection.

It is respectfully submitted that Arnold and Kane are not properly combinable *per se* because the references lack any suggestion for such a combination of the laminate of Arnold (col. 7, line 2) and the lofted mat of fibers of Kane (see Abstract, line 1).

Arnold teaches a brief application of high heat flow through a hot air knife (HAK) to quickly melt bond [1] each of its spunbond layers. The HAK process taught by Arnold is not taught as suitable for crimping the latently crimped fibers of Kane. Arnold teaches a HAK application of heat to meltbond its webs at 200-550 °F (col. 5, line 28) (or 320 °F in the Examples) at a flow rate of 1000 to 10000 fpm at an exposure time of less than a tenth of a second. Kane teaches that its crimps are achieved through the application of a lower heat by an updraft oven at 230 °F with an air velocity of 200 fpm for 5 seconds (col. 6, line 36).

Because Kane teaches the use of a foraminous belt 70 (col. 5, line 17) to carry its fibers, such a foraminous belt arrangement would be assumed (by the person of skill in the art) to be necessary to allow the heated updraft air to flow through the web and achieve crimping. Kane makes no suggestion that a nonwoven substrate layer according to Arnold would be appropriate for carrying the latent crimp fibers through an updraft oven. Indeed, an additional nonwoven substrate (as in Arnold) on the foraminous belt and underneath Kane's latently crimped fibers would restrict or inhibit the heated updraft air flow crimping system of Kane.

In order for a combination of references to be suggested to the person having ordinary skill in the art, some practical advantage to, or success from, the

1 At the top of its page 4, in seeking to negate Applicants' previously presented arguments that Arnold does not suggest the claimed method, the final Office Action denies that Arnold teaches meltbonding of its web because Arnold recites that the HAK treatment is "insufficient to melt the fiber." The melting of a fiber warned against by Arnold would be understood by a person having ordinary skill in the art to refer to a melting, i.e., liquid phase, of the fibers which would induce structural changes to the web. Arnold clearly states at col. 5, line 28, that the HAK is used to soften the fibers to bond them together into a web, i.e., "meltbond" the web. Therefore the final Office Action is in error with respect to the teachings of Arnold concerning "meltbonding." Conversely, Kane at col. 5, lines 25 - 29 teaches that its heating temperature should be below the softening temperature of the fibers.

combination must be presented from the references or the art in order to lead to an expectation of success in the combination (see MPEP §2143). As noted in footnote 1, the temperatures of Kane and Arnold are selected to have distinctly different effects. As discussed above, the mechanisms of applying said heat are also distinctly different. Thus, no combinability of the references or success of such combination can be seen to result from the combination of Arnold and Kane due to their disparate heat sources.

The final Office Action, at page 4, second paragraph, seeks to negate the Applicants' arguments with respect to the impropriety of using a nonwoven web as in Arnold as a carrier sheet of the latent-crimped fibers of Kane. The final Office Action states that: "Arnold teaches employing a foraminous belt to hold the deposited fibers." However, as noted above, in the combination suggested by the final Office Action, the latently crimped fibers of Kane would not be applied to a foraminous belt, they would be applied to the first nonwoven web of Arnold. The layer of the latently crimped fibers of Kane must then be heat treated to activate the latent crimp.

The references suggest two methods of heat application: 1) the HAK treatment of Arnold (which is a meltbonding technique not taught as sufficient to activate the latent crimp), or 2) the updraft oven teachings of Kane (which is impeded by the first nonwoven web of Arnold interposed between the foraminous belt and the layer of latently crimped fibers).

Applicants note that the Advisory Action of 15 January 2004 newly set forth the position that "The claims as currently presented do not require that crimped layer either be formed directly on the first layer or that it be crimped directly on the first layer." (Advisory Action, "Continuation of 5").

Applicants note that the limitations of the preamble and body of Claim 7 limit the claimed method to the steps <u>in the order stated</u>.

Thus, according to the original Claim 7 (underling for emphasis):

7. (original) A method of making a lofty nonwoven fabric laminate in a single, in-line process, comprising steps <u>in the order of</u>:

a) depositing a first layer of filaments onto a wire;

b) bonding the first layer to an integrity sufficient to withstand high speed web transfer;

c) <u>depositing a second layer of crimped homofilament fibers connected to the first layer while the first layer remains on the wire;</u>

d) <u>traversing the second layer of crimped homofilament fibers through a flow of heated air at a temperature, flow rate, and traversal rate sufficient to set the crimps of the fibers</u> without substantial melt bonding or relaxation of the fibers; and

e) bonding the heat set second layer and the first nonwoven layer in a manner having sufficient integrity to withstand high speed web transfer.

It is believed that the phrase "connected to" as taught by the specification at pages 18-20 makes it readily apparent that the first and second layers are required to be coextensive, whether there is an intervening fiber deposition/layer or not.

The Advisory Action of 15 January 2004 goes on to state: "The claim then requires that the second layer be traversed through a flow of heated (sic) at a temperature flow rate and traversal rate sufficient to heat set the crimps of the fibers without substantial melt bonding or relaxation of the fibers. Again Kane teaches this step." In this analysis, the Advisory Action has left out the critical limitation (as required by the order of the steps recited) that the heat setting occurs, according to Claim 7, while the first and second layers are connected.

Hence, the arguments of Applicants (above) with respect to the failure of the Arnold and Kane references under 35 USC § 103 to teach the claimed heat set crimped layer on a first nonwoven layer are considered valid and persuasive. With regard to the laminate itself, it is believed that no suggestion is given by the references to achieve a laminate retaining the claimed "lofty second nonwoven layer having stable, uncompacted crimped homofilament fibers substantially free of melt bonding and having sufficient integrity to withstand high speed web transfer" by any reasonable combination of the methods set forth in Arnold or Kane for making their separate materials.

Thus, for all the foregoing reasons, a person having ordinary skill in the art would be unlikely to combine the cited references to arrive at the method or structure of the presently claimed invention.

The Board is therefore respectfully requested to overturn this rejection.

9. APPENDIX

An appendix containing a copy of the claims involved in the appeal is attached hereto.

For all the foregoing reasons it is respectfully requested that the Board rule in Applicants' favor and overturn all outstanding rejections.

A check in the amount of $330.00 is included herewith to cover the fee for filing this brief.

The Commissioner is hereby authorized to charge any deficiency or to credit any overpayment to Deposit Account No. 19-3550. A duplicate of this sheet is enclosed.

Favorable consideration is requested.

Respectfully submitted,

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APPENDIX

7. A method of making a lofty nonwoven fabric laminate in a single, in-line process, comprising steps in the order of:

a) depositing a first layer of filaments onto a wire;

b) bonding the first layer to an integrity sufficient to withstand high speed web transfer;

c) depositing a second layer of crimped homofilament fibers connected to the first layer while the first layer remains on the wire;

d) traversing the second layer of crimped homofilament fibers through a flow of heated air at a temperature, flow rate, and traversal rate sufficient to set the crimps of the fibers without substantial melt bonding or relaxation of the fibers and to provide an integrity sufficient to withstand high speed web transfer; and

e) bonding the heat set second layer and the first nonwoven layer in a manner having sufficient integrity to withstand high speed web transfer.

8. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the second layer of fibers is uncompacted.

9. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the first layer filaments comprise spunbond fibers.

10. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, where the first layer fibers are comprised of polypropylene polymer.

11. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the first layer is bonded with a hot air knife.

13. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the second layer crimped fibers comprise helically crimped fibers.

15. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, where the second layer fibers comprise polypropylene polymer.

16. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the flow of heated air to the second layer is provided by a diffuse hot air knife.

17. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the temperature is about 260 °F to about 310 °F.

18. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the flow rate is between about 700 feet per minute to about 850 feet per minute.

19. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the traversal rate is between about 300 feet per minute to about 800 feet per minute.

20. The method of making a lofty nonwoven fabric laminate in a single, in-line process according to Claim 7, wherein the second layer and first layer are bonded by a thermal point bond process.

21. A lofty nonwoven fabric laminate, comprising:

a first nonwoven layer having sufficient integrity to withstand high speed web transfer;

a lofty, second nonwoven layer having stable, uncompacted crimped homofilament fibers substantially free of melt bonding and having sufficient integrity to withstand high speed web transfer; and

the second nonwoven layer and the first nonwoven layer bonded with sufficient integrity to withstand high speed web transfer.

22. The lofty nonwoven fabric laminate of Claim 21, wherein the first layer filaments comprise spunbond fibers.

23. The lofty nonwoven fabric laminate of Claim 21, wherein the first layer fibers are comprised of polypropylene polymer.

24. The lofty nonwoven fabric laminate of Claim 21, wherein the first layer is heat fused.

25. The lofty nonwoven fabric laminate of Claim 21, wherein the second layer crimped fibers comprise spunbond fibers.

27. The lofty nonwoven fabric laminate of Claim 21, wherein the second layer crimped fibers comprise helically crimped fibers.

29. The lofty nonwoven fabric laminate of Claim 21, where the second layer fibers are comprised of polypropylene polymer.

30. The lofty nonwoven fabric laminate of Claim 21, wherein the second layer crimped fibers are heat set.

31. The lofty nonwoven fabric laminate of Claim 21, wherein the second layer and first layer are bonded by a thermal point bond process.

32. The lofty nonwoven fabric laminate of Claim 21, further comprising: an intermediate nonwoven layer between the first layer and the second layer.

33. The lofty nonwoven fabric laminate of Claim 32, wherein the intermediate nonwoven layer is spunbond.

34. The lofty nonwoven fabric laminate of Claim 32, wherein the intermediate nonwoven layer is heat treated.

35. The lofty nonwoven fabric laminate of Claim 32, wherein the intermediate nonwoven layer is meltblown.

36. The lofty nonwoven fabric laminate of Claim 32, wherein the intermediate nonwoven layer is not heat treated.

37. The lofty nonwoven fabric laminate of Claim 32, wherein the first and second nonwoven layers are point bonded.

38. The lofty nonwoven fabric laminate of Claim 21, wherein the first and second nonwoven layers are adhesive bonded.